APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR		ATTORNEY DOCKET NO.
08/999,766	07/23/97	MOSKOWITZ	S	2377/23

TM11/1026

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EXAMINER
MEISLAHN, D

ART UNIT	PAPER NUMBER
2132	15

DATE MAILED: 10/26/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

PTO-90C (Rev. 2/95)

1- File Copy

Office Action Summary

	Application No.	Applicant(s)
	08/999,766	Moskowitz et al.
	Examiner	Group Art Unit
	Douglas Meislahn	2132

☒ Responsive to communication(s) filed on _Aug 18, 2000_

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire _____3___ month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) _25-63_____ is/are pending in the applicat

Of the above, claim(s) _____ is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) _25-63_____ is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

   ☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been

      ☐ received.

      ☐ received in Application No. (Series Code/Serial Number) _____ .

      ☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   *Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____14___

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

— SEE OFFICE ACTION ON THE FOLLOWING PAGES —

DETAILED ACTION

Response to Amendment

1.   This action is in response to the CPA amendment filed 18 August 2000 that

amended claims 25, 29, and 43 while adding claims 62 and 63. The amendments have

overcome the rejections based upon 35 USC 112.

Response to Arguments

2.   Applicant's arguments with respect to claims 25-63 have been considered but are

moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

3.   The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

4.   Claims 62 and 63 are rejected under 35 U.S.C. 112, second paragraph, as being

indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention.

5.   The term "imperceptible" in claims 62 and 63 is a relative term which renders the

claim indefinite. The term "imperceptible" is not defined by the claim, the specification

does not provide a standard for ascertaining the requisite degree, and one of ordinary

skill in the art would not be reasonably apprised of the scope of the invention. Use of

the word "imperceptible" needs to be accompanied by a reference to what entity would

not be able to perceive the change.

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

7.   Claims 25, 29, 33, 35, 40-43, and 46-48 are rejected under 35 U.S.C. 102(a) as

being anticipated by Schneier (Applied Cryptography, 1994).

On page 67, Schneier talks about encrypting subliminal data into a message

using a symmetric key. This is equivalent to encoding independent information into a

signal. On page 68, Schneier says that this technique might be used, among other

things, by the government to mark digital data. This marking anticipates watermarking.

Chapter 10 of Schneier deals with the Digital Encryption Standard. DES uses an

effectively 56-bit key. As described on pages 224-226, this key is broken down and

permuted in the encryption of a block of data. This key breakdown and the subsequent

permutations correspond to applicant's mask set. DES uses starting vectors and

padding at the end of messages.   These correspond to the start of message delimiter

and number of bytes to follow the message of applicant's invention. DES uses 64-bit

block encryption and divides the blocks into two 32-bit sections for encryption. This

anticipates applicant's claims 42 and 47. Claims 43 and 48 are anticipated by DES'

mixing of the two 32-bit blocks and the integration of the key. It would have been

obvious to a person of ordinary skill in the art at the time the invention was made to

encrypt the key-encrypted watermark data of Schneier with DES because DES is an

encryption standard.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Schneier in view of Barton (5912972).

Schneier teaches encrypting digital watermarks into information with a key. He

does not say that the information includes a stream of digital samples. Barton's teaches

embedding authentication information within a stream of digital data. Therefore it would

have been obvious to a person of ordinary skill in the art at the time the invention was

made to authenticate digital sample streams as in Barton with the key-encrypted

watermarks of Schneier.

10.   Claims 27 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Schneier.

Schneier teaches encrypting digital watermarks into information with a key. He

does not say that the information includes a continuous analog waveform. Official

notice is taken that continuous analog waveforms are old and well-known. Since they

can carry information, continuous analog waveforms sometimes need to be

authenticated. Therefore it would have been obvious to a person of ordinary skill in the

art at the time the invention was made to authenticate continuous analog waveforms with the key-encrypted watermarks of Schneier.

11.   Claims 28, 32, 38, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier in view of Braudaway et al.

Schneier teaches encrypting digital watermarks into information with a key. He does not set out that the watermark is used in any specific manner, although he does say that the possibilities are endless.

Braudaway et al. talk about using a random or pseudo-random key in the process of putting a watermark into data in lines 21-26 of the seventh column.

Lines 56-57 of column one say that there are watermarks that identify copyright owners.

By watermarking the data, Braudaway et al.'s method creates a first derivative encoded signal. It is inherent that attempts to decode the watermark without the proper key would further obfuscate the information. It was once theorized that encrypting information with two keys in order to strengthen security could in fact be mimicked by using one key which would possibly be easier to break. Although this theory has since been proven incorrect, the immediate solution was to strengthen security by encrypting with a first key and then decrypting with a non-corresponding second key. Providing information is inherent.

In the abstract, Braudaway et al. say that certain pixels brightness are altered as a result of the watermark. This change in brightness anticipates claim 38's spectral values. Also in the abstract, Braudaway et al. talk about using only certain non-

transparent values of the watermark. These non-transparent values form a map to

meet claim 39.

It would have been obvious to a person of ordinary skill in the art at the time the

invention was made to incorporate any of the teachings of Braudaway into the "endless"

possibilities of Schneier.

12.   Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Schneier.

Schneier teaches encrypting digital watermarks into information with a key. He

does not say that the information is then modified. Encryption modifies data. Official

notice is taken that encrypting information in order to protect the data from unauthorized

viewing is old and well-known. Therefore it would have been obvious to a person of

ordinary skill in the art at the time the invention was made to protect the watermarked

data of Schneier by encrypting it.

13.   Claim 36 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier

in view of Morris (5530751).

Schneier teaches encrypting digital watermarks into information with a key. They

do not say that one bit is read out of every sample for the watermark. In lines 50-52 of

the third column, Morris says that the human ear cannot detect the difference between a

sound value of 64000 and 64001. This would be a one-bit change of the least

significant bit. As taught by Morris, these small changes can be used to carry

identification codes. Therefore it would have been obvious to a person of ordinary skill

in the art at the time the invention was made to discretely carry the watermark

information of Schneier in the least significant bits as taught by Morris.

14.   Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier

in view of Powell et al. (5930377).

Schneier teaches encrypting digital watermarks into information with a key. They

do not say that samples are mapped to extract bits of information. As is explained in

their abstract and diagrams, Powell et al. teach a method of embedding a digital

watermark which requires use of a map of an image to determine the places to embed

the watermark. This method is advantageous because, as explained in lines 42-43 of

column 1, it is resistant to image modification. Therefore it would have been obvious to

a person of ordinary skill in the art at the time the invention was made to employ the

mapping techniques of Powell to the encryption system of Schneier so as to make the

data's watermark resistant to data modification.

15.   Claims 44, 45, and 49 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Schneier in view of Cox et al. ("Secure Spread Spectrum

Watermarking for Multimedia").

Schneier teaches encrypting digital watermarks into information with a key. They

do not say that the data is spectrally spread before insertion of the digital watermarked.

In their abstract, Cox et al. talk about the advantages, which include versatility, difficulty

of watermark removal, and robustness, of their system of spectrally spreading data,

inserting the watermark, and then putting the watermarked data through an inverse

spectral spread. Therefore it would have been obvious to a person of ordinary skill in

the art at the time the invention was made to reap the benefits of Cox et al.'s method in

Schneier's system.

16.   Claims 50-51 and 58-61 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Schneier in view of Barton (5912972).

Schneier teaches encrypting digital watermarks into information with a key. They

do not say that a digital signature or hash of the start of message delimiter is validated.

In his second figure, Barton shows a digital signature being used as an authentication

tool. Digital signatures are made so that they are unique to the article which they

authenticate. Therefore it would have been obvious to a person of ordinary skill in the

art at the time the invention was made to use a digital signature, as taught by Barton, to

verify the message sent by Schneier.

17.   Claims 52-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Schneier in view of Barton (5912972).

Schneier and Braudaway et al. teach encrypting digital watermarks into

information with a key. They do not say that each sample has unique watermark

information. In lines 20-33 of column 4, Barton teaches including sequence data with

the authentication data. The authentication data is a reduced representation of digital

data. Therefore it would have been obvious to a person of ordinary skill in the art at the

time the invention was made to uniquely identify different samples so that the samples

can be placed in the correct order. Unique watermarks could also deter cryptanalysis

attacks.

Pre-processing sample windows is inherent, as is determining which and how many windows will contain watermark information.

18.   Claims 56-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier in view of Barton as applied to claim 55 above.

Schneier teaches encrypting digital watermarks into information with a key. They do not say that the data that is watermarked is hashed and attached to itself. Official notice is taken that hashing data and then attaching the hash to the data is old and well-known. The hash acts as a verification. Digital signatures with message appendix are a common term implementation of this. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to attach a hash of the information to the information. This hash would be used to verify the integrity of the information.

19.   Claims 62 and 63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schneier.

Schneier teaches encrypting digital watermarks into information with a key. He does not say that this encryption causes a change that is imperceptible. Official notice is taken that it is old and well known to assure that steganographic changes are imperceptible. One example of this is Nazi spies embedding information into punctuation marks. Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to for the method of Schneier to follow the method of Nazi spies and create changes that are not readily perceptible.
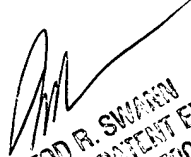
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas J. Meislahn whose telephone number is (703) 305-1338. The examiner can normally be reached between 9AM - 6PM, except for every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tod Swann can be reached on (703) 308-7791. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-9051 for regular communications and (703) 308-9052 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

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Douglas J. Meislahn
Examiner
Art Unit 2767

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DJM
October 22, 2000

TOD R. SWANN
SUPERVISORY PATENT EXAMINER
GROUP 2700